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Forest Service

FOREST INSECT AND DISEASE MANAGEMENT

Technology Update

So.theastern Area, State and Private Forestry, 1720 Peachtree Road, N.W., Atlanta, Ga. 30367

Southern Pine Beetle Fact Sheet Number 10

RATING THE SUSCEPTIBILITY OF PINE STANDS TO SOUTHERN PINE BEETLE ATTACK

The southern pine beetle (SPB) occurs in all geographic regions of the South. Studies have shown that high-hazard stands are commonly associated with slow radial growth. Conditions that cause poor growth differ greatly in the Southern Coastal Plain, the Piedmont, and the Southern Appalachian Mountains. Several rating systems have been developed to identify high-hazard stands within these areas. Testing and implementation of the ranking systems have been limited to stand, site, and insect conditions associated with selected areas in the geographic subregions.

The Southern Coastal Plain

Natural stands susceptible to SPB attack in the Coastal Plain are characterized by high stand densities, a large proportion of pine sawtimber, and declining radial growth. Outbreaks occur most frequently in these stands located on poorly drained soils and low-lying areas; trees on dry or droughty soils are less often attacked. Rating systems have been developed for east Texas, the Kisatchie National Forest in Louisiana, corporate timberland in Louisiana, Mississippi and Texas, and forests in southern Arkansas. Details are summarized in the following publications:

Hicks, R.R., Jr.

1980. A simple stand hazard rating system for east Texas. *In* How to rate susceptibility of pine stands to southern pine beetle. Workshop sponsored by Stephen F. Austin Univ., USDA ESPBRAP, and the Texas For. Serv., Nacogdoches, Tex., March 27, 1980.

Hicks, R.R., Jr., J.L. Howard, K.G. Watterston, and J.E. Coster.

1980. Rating forest stand susceptibility to southern pine beetle in east Texas. *For. Ecol. Manage.* 2:(in press).

Ku, T.T., V.B. Shelburne, and J.M. Sweeney.

1979. Preventing damage from the southern pine beetle through better forest management. Pest leaflet of Univ. of Ark., Monticello, Ark., Ark. For. Comm., and USDA For. Serv., Southeast. Area. Published by Dep. For., Univ. of Ark., Monticello.

Ku, T.T., J.M. Sweeney, and V.B. Shelburne.

1980. Site and stand conditions associated with southern pine beetle outbreaks in Arkansas--a hazard rating system. *South. J. Appl. For.* 4: 125-132.

Kushmaul, R.J., M.D. Cain, C.E. Rowell, and R.L. Porterfield.

1979. Stand and site conditions related to southern pine beetle susceptibility. *For. Sci.* 25: 656-664.

Lorio, P.L., Jr.

1978. Developing stand risk classes for the southern pine beetle. Res. Pap. SO-144. 9 p. USDA For. Serv., South. For. Exp. Stn., New Orleans, La.

Mason, G.N.

1980. Hazard verification and implementation through aerial photo stand mapping. *In* How to rate susceptibility of pine stands to southern pine beetle. Workshop sponsored by Stephen F. Austin State Univ., USDA ESPBRAP, and Tex. For. Serv., Nacogdoches, Tex., March 27, 1980.

The Piedmont

Natural stands susceptible to endemic SPB attack in the Piedmont are characterized by well-stocked pine stands with a large percentage in shortleaf pine, slow radial growth during the most recent 10 years, and a high clay content in the surface and subsurface horizons. Two systems have been developed for ranking the susceptibility of natural stands to SPB attack in the upper Piedmont of Georgia. The first is a predictive equation that includes variables easily measured or often contained in existing inventories; the second is designed for use in the field by service foresters. Piedmont conditions are described in the following pest leaflet.

Belanger, R.P., and T.S. Price.

1979. The susceptible forest in the upper Piedmont. Pest leaflet of Ga.For. Comm., Macon, Ga., and USDA For. Serv., Southeast. For. Exp. Stn., Asheville, N.C.

The Southern Appalachians

Studies of stands in the mountains of Georgia, North Carolina, South Carolina, and Tennessee have shown that those severely attacked by the southern pine beetle were densely stocked, slow growing, and had a large proportion of overmature pine sawtimber. Shortleaf pine and pitch pine were more susceptible to beetle attack than Virginia pine and eastern white pine. Systems are be-

ing developed to rank the susceptibility of natural stands in the mountains. See the following publication for additional details.

Belanger, R.P., E.A. Osgood, and G.E. Hatchell

1979. Stand, soil, and site characteristics associated with southern pine beetle infestations in the southern Appalachians. Res. Pap. SE-198. 7 p. USDA For. Serv., Southeast. For. Exp. Stn. Asheville, N.C.

For further information, contact your State forestry agency or:

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